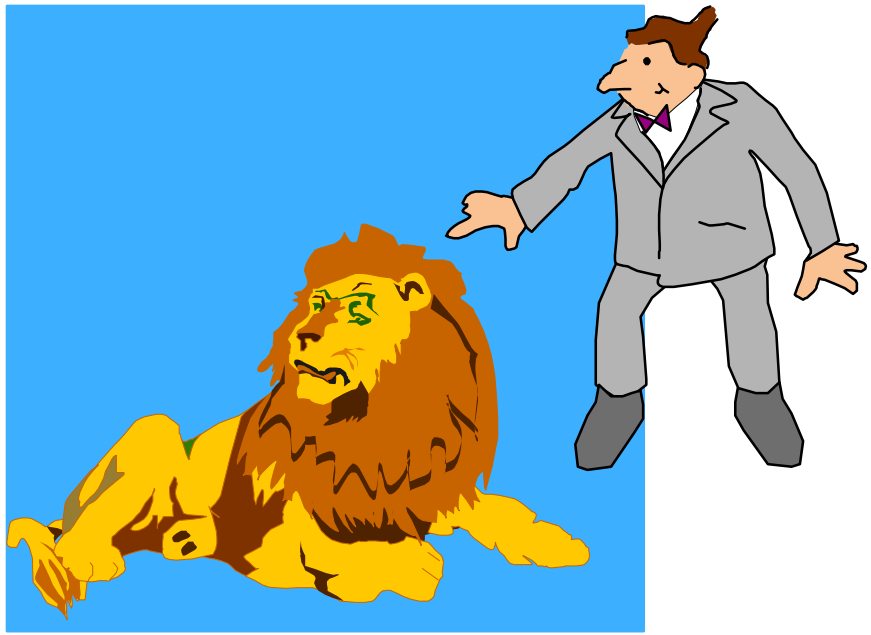
N12

Taming Your SYSLOG Daemon with Cron



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Agenda

- **Importance of SYSLOG Daemon in CS for OS/390**
- **How to Set Up**
- **How to Manage**
  - **Running Cron Daemon**
  - **Timestamp Issues**
  - **Other Logs and Locations (ROUTED, OMPROUTE)**

Abstract

TITLE: N12, Taming Your SYSLOG Daemon with CRON

PRESENTER: Gwendolyn J. Dente, Advanced Technical Support

AUDIENCE: Technical Implementer of TCP/IP in CS for OS/390

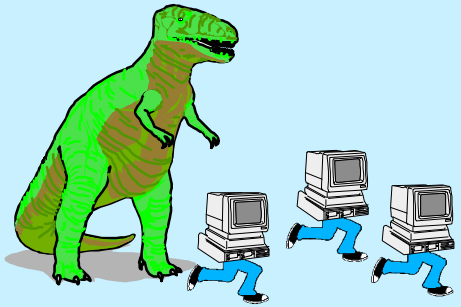
ABSTRACT: It's great news: You can essentially isolate your TCP/IP logs in the Hierarchical File System (HFS) of your UNIX environment. Well, how practical, but you are probably asking yourself how to manage this environment. After all, your installation may have policies on deleting and/or archiving traditional MVS system logs. How do you manage these policies if you are working with syslog files in the HFS? This single session presents several approaches, including actual coding examples. Perhaps you will see an innovative way to apply these examples to your own production environment! You could even take the ideas here and expand them to managing logs other than those of the SYSLOG Daemon. Or even expand them to managing other files stored in the HFS. Come join us for this practical technical session.

ACKNOWLEDGMENTS: Ray Parks, IBM Canada and Marc Price, IBM Raleigh, NC, helped me understand CRON and get it working on OS/390. Marc provided a sample shell script, which I used as a basis for the shell script presented in the CRON section of this document. Alfred Christensen, IBM Raleigh, provided many of the visuals and notes for this presentation.

Importance of SYSLOG Daemon

The News About CS on OS/390

- Major S/390 strategic initiatives, such as server consolidation, network computing, and new applications - all rely on fast and robust TCP/IP services on OS/390:
  - improved performance
  - ability to scale TCP/IP application workload
  - better availability
  - more security features
  - more functions (both base and application functions)



Mainframes are back!

- The OS/390 UNIX environment is a major TCP/IP application environment:
  - TCP/IP and OS/390 UNIX integration
  - TCP/IP application transition to OS/390 UNIX
  - Fast implementation of new servers or clients based on code ported from other UNIX platforms
- SNA/APPN and TCP/IP will co-exist for many years in the OS/390 environment:
  - OS/390 TCP/IP and SNA/APPN services integration

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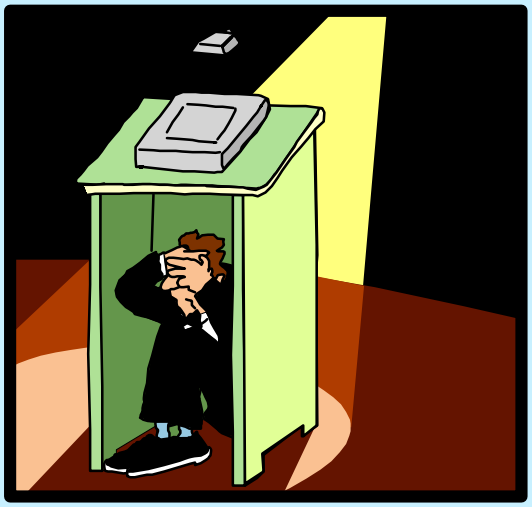
What Happened to My Joblog?!!

```
********** TOP OF DATA **********
 J E S 2  J O B  L O G  --  S Y S T E M  S 7 3

--- TUESDAY,   20 JUL 1999 ----
IEF695I START TCPIP1A  WITH JOBNAME TCPIP1A  IS
$HASP373 TCPIP1A  STARTED
IEE252I MEMBER CTIEZB01 FOUND IN SYS1.PARMLIB
EZZ0300I OPENED PROFILE FILE DD:PROFILE
EZZ0309I PROFILE PROCESSING BEGINNING FOR DD:PROF
.....
EZZ0334I IP FORWARDING IS ENABLED
.....
```



What happened here?

This looks somewhat familiar, but there is not as much here as there used to be!

```
  Display  Filter  View  Print  Options  Help
-------------------------------------------------------------
SDSF DA S73 MVSNM2  PAG  0 ...  6 NO DISPLAYABLE DATA
COMMAND INPUT ===>                          SCROLL ===> CSR
NP   JOBNAME  STEPNAME PROCSTEP ...  REAL PAGING    S
     NM2AHOD3 STEP1              ...   1 1278   0.00   0.
S    NM2AFTP1 STEP1              ...   1 1418   0.00
0.
     NM2AINET STEP1              ...   1 1296   0.00   0.
     NM2AHOD5 *OMVSEX            ...   1 3410   0.00   0.
```

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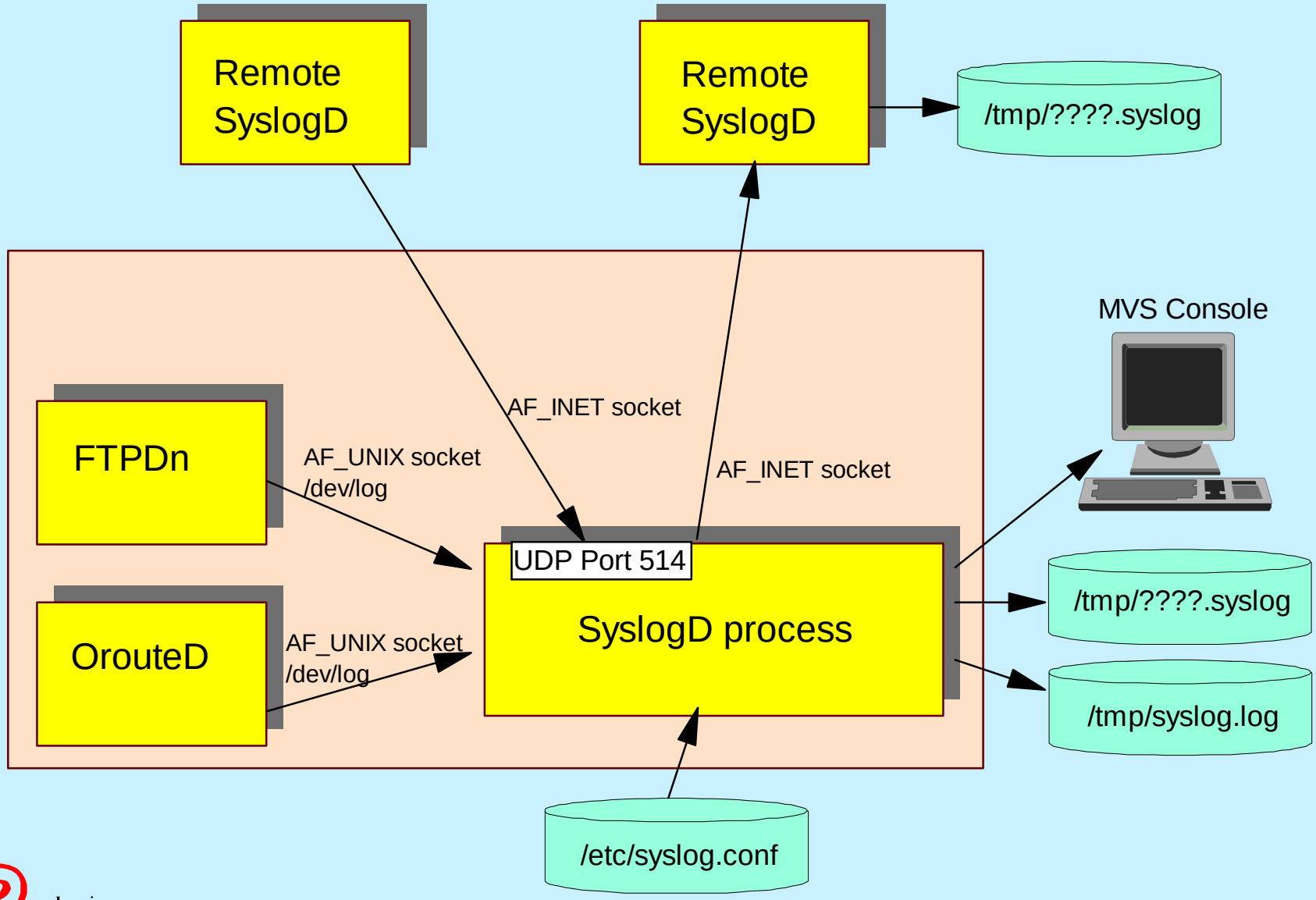
SYSLOGD Logging Daemon



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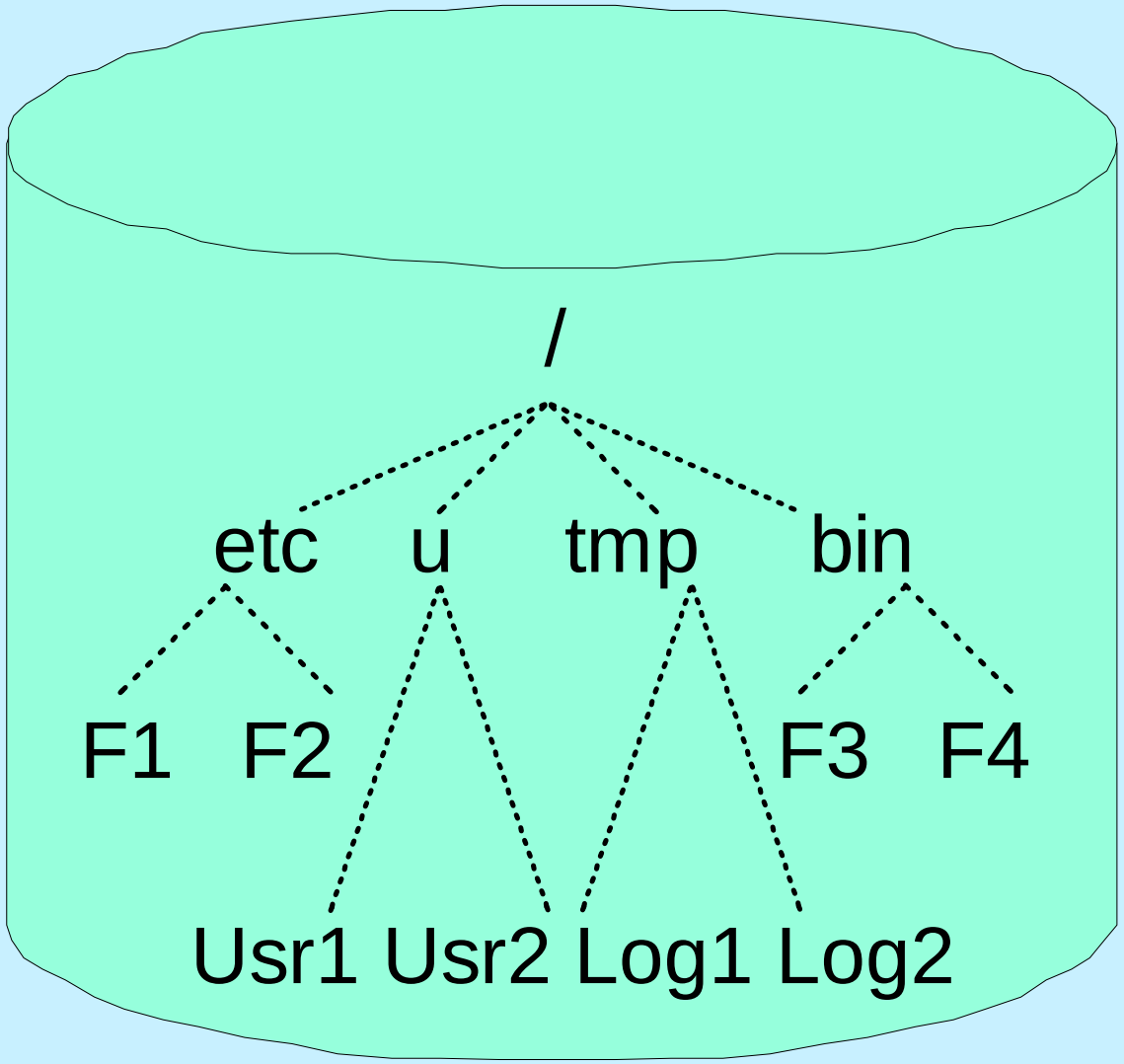
UNIX Hierarchical File System

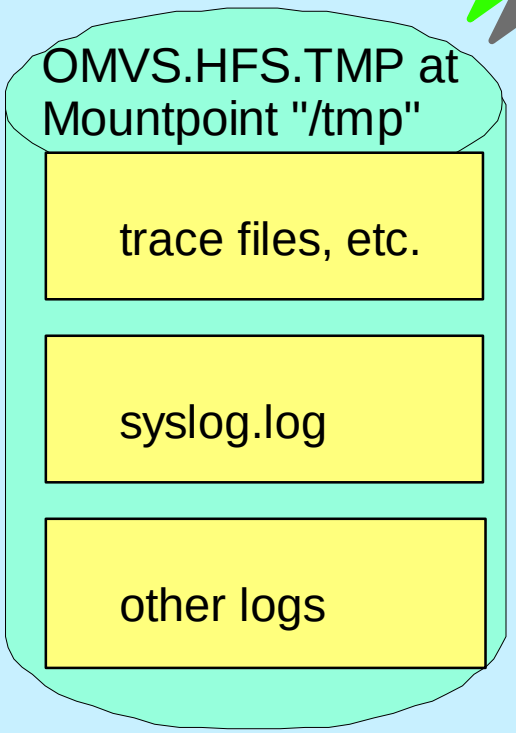
If you place files that can grow very large into the same HFS as the one mounted on the Root Directory, you can fill up the entire HFS and waste space needed by other system jobs and files.



How to Handle /tmp

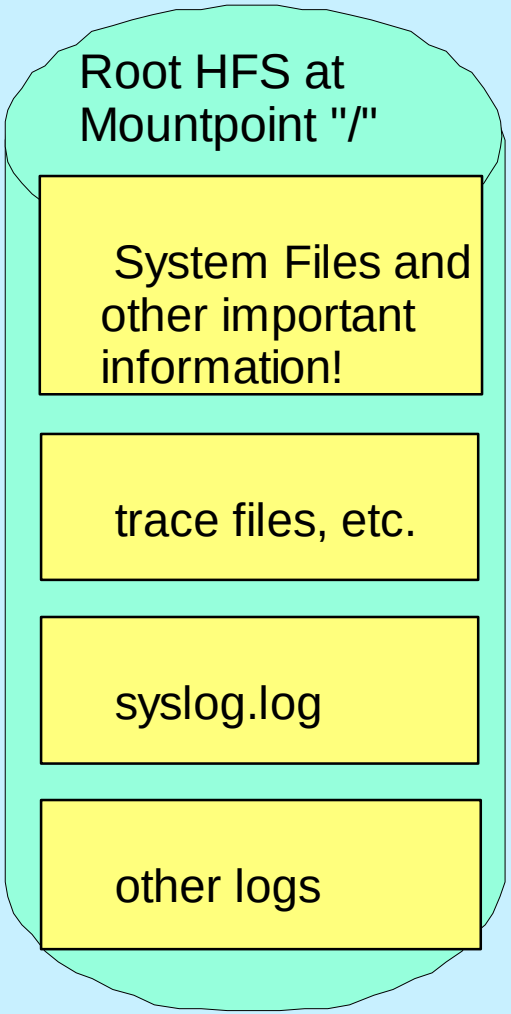
Unless you are using a Temporary File System for your log files, always use a separate HFS and mount it at /tmp.

YES!



NO!

If you place log files and other files that can grow very large into the Root Directory, you can fill up the entire HFS and waste space needed by other system jobs.



Defining SYSLOG Daemon

SYSLOGD Configuration

- **Logging rules are maintained in the /etc/syslog.conf file.**
- **A logging rule consists of an identifier and a destination.**
- **Identifiers consist of a logging *facility* name and a *priority* code.**

Facility_name.Priority_code Destination

Sample C-source program that uses SyslogD:

```
#include <syslog.h>
openlog("oec", LOG_PID, LOG_LOCAL0);
syslog(LOG_INFO, "Hello from oec");
closelog();
```

The above sample resulted in the following SyslogD output:

May 26 11:27:51 mvs18oe oec[3014660]: Hello from oec

SYSLOGD Facility Names

kern	OE kernel messages
user	This is the default facility used by anyone who does not fall into one of the other categories
mail	Mail system messages
news	Usenet system messages
uucp	uucp messages
daemon	Various server messages. This facility name is used by the various servers (FTPD, RSHD, and REXECD)
auth	Authorization messages
authpriv	Same as auth
cron	cron system messages
lpr	Printing system messages
local0-7	facility names meant for local use. TelnetD uses local1 to log its messages
*	A placeholder that is used to represent any facility name

SYSLOGD Priority Codes

emerg	Emergency - system is becoming unusable
panic	Same as emerg
alert	Immediate action is required
crit	Critical condition. A device or a component is becoming unusable
error	Error condition
warning	Warning condition
notice	Normal, but significant condition
info	Information message
debug	Debugging message
none	Placeholder used to represent none of the priorities
*	Placeholder used to represent all priority codes

A priority code includes all above priorities. Emerg is the highest priority.

SYSLOGD Destinations

- **A file in the hierarchical file system**

```
facility_name.priority_code  /tmp/syslogd/auth.log
```

- **One or more local shell users**

```
facility_name.priority_code user1,user2
facility_name.priority_code  *
```

- **A SyslogD server on another host**

```
facility_name.priority_code  @myaixserver
```

- **The MVS console**

```
facility_name.priority_code  /dev/console
```

A message may be logged in more destinations or in the same destination multiple times, if more rules match the facility name and priority code of the message.

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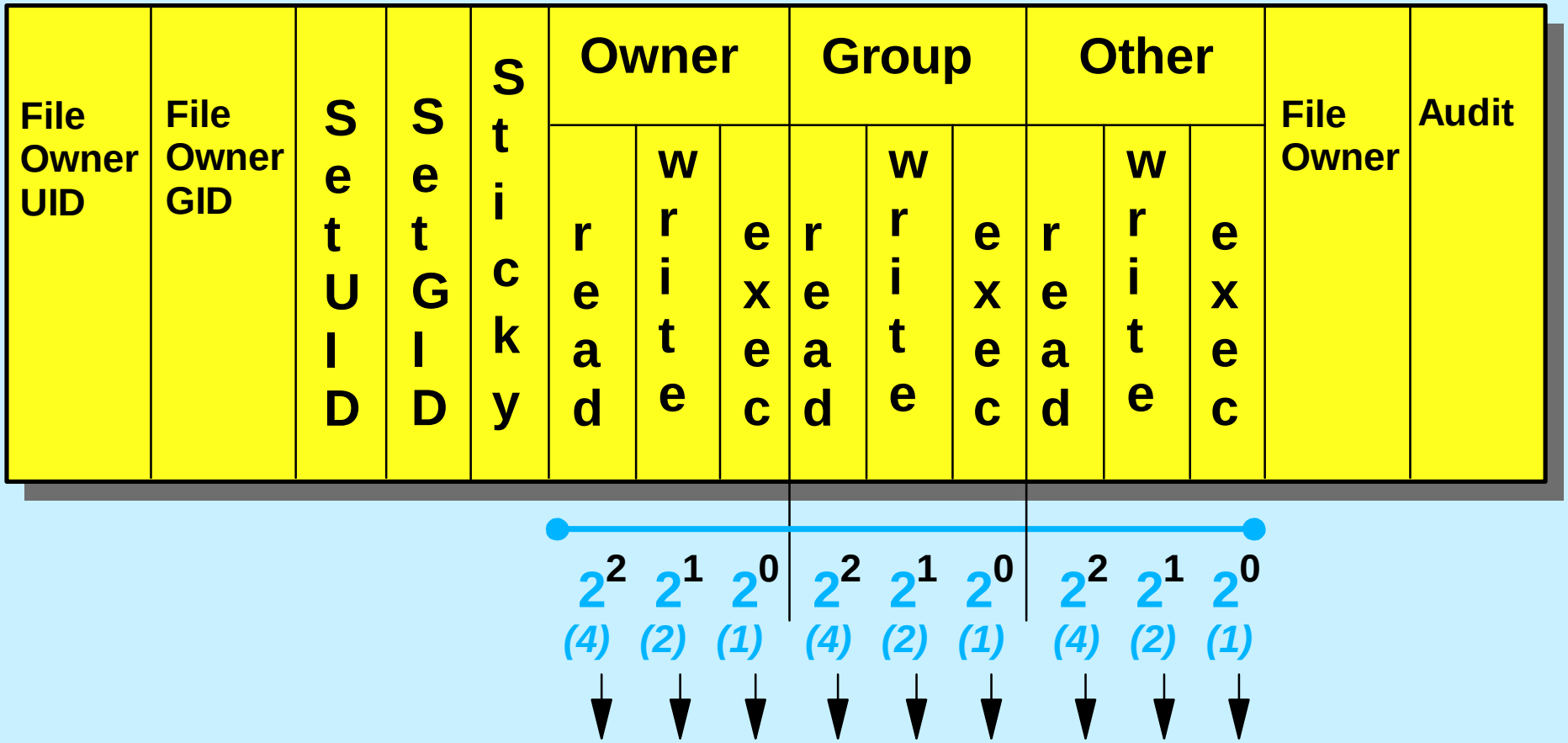
SYSLOG.CONF: An Easy Start

```
#
# All messages go to a single log.
*.*                 /tmp/syslog.log
```

- **Both SYSLOG.CONF and SYSLOG.LOG can be created with permission bits of 644.**
  - **6 = Owner can Read and Write**
  - **4 = Group can Read**
  - **4 = Other can Read**

Permission Bits for HFS Files



Permission of 755 is:	1	1	1	1	0	1	1	0	1
Permission of 644 is:	1	1	0	1	0	0	1	0	0

SYSLOGD Configuration File (syslog.conf)

```
# The files named must exist before the syslog daemon is started.
#
# facility-name.priority  destination
# ---------------------------------------------
#
# All alert messages (and above priority messages) go to the
# MVS console
#
*.alert                   /dev/console
#
# All authorization messages go to auth.log
#
auth.*                    /tmp/syslogd/auth.log.a
#
# All error messages (and above priority messages) go to
error.log
#
*.err                     /tmp/syslogd/error.log.a
```

SYSLOG.CONF (cont'd.)

```
#
# All debug messages (and above priority messages) from
# telnet go to telnet.debug
#
local1.debug                /tmp/syslogd/telnet.debug.a
#
# All ftp, rexecd, rshd debug messages (and above priority
# messages) go to server.debug
#
daemon.debug                /tmp/syslogd/server.debug.a
#
# Everything not directed to a destination above is directed
# to garbagecan.log (so we don't lose anything important)
#
*.*;local1.none;daemon.none;auth.none
/tmp/syslogd/garbagecan.log.a
```

If you update syslog.conf, you can request SYSLOGD to re-read the configuration file without restarting SYSLOGD by sending a SIGHUP signal:

kill -SIGHUP nnnnnn

Prestarting SYSLOGD (Recommended)

Start with UNIX /etc/rc

```
# Create the target files for SYSLOG daemon if it is running on TFS
#>/tmp/auth.log
#>/tmp/error.log
#>/tmp/debug.log
#>/tmp/syslog.log

# Start the SYSLOG daemon for logging UNIX activity
_BPX_JOBNAME='SYSLOGD' /usr/sbin/syslogd -f /etc/syslog.conf &
#  /usr/sbin/syslogd -f /etc/syslog.conf &
# Start the INET daemon for remote login activity
_BPX_JOBNAME='INETD' /usr/sbin/inetd /etc/inetd.conf &
#  /usr/lpp/tcpip/sbin/dhcpsd -f /etc/dhcpsd.cfg &
# Start the CRON daemon for automated, timed operations
_BPX_JOBNAME='CRON' /usr/sbin/cron &
#          /usr/sbin/cron &
sleep 5
echo /etc/rc script executed, `date`
```

More about this later!

Jobname "SYSLOGDn" if "_BPX_JOBNAME='SYSLOGD' ..."

Jobname "ETCRCn" if started without "_BPX_JOBNAME=...."

Changes to TCP/IP for SYSLOGD

Set Aside Port for SYSLOG as an OMVS Process; You might include it in Autolog

```
AUTOLOG 5
;  NM2ASYSL                    ; SYSLOG Daemon as
PROC
ENDAUTOLOG

PORT
     514 UDP OMVS                ; SYSLOG Daemon
```

Set Aside Port for SYSLOG in /etc/services

```
syslog              514/udp
```

You could start with a Procedure and even autolog it ... BUT MUCH BETTER use /etc/rc.

```
//NM2ASYSL PROC MODULE='SYSLOGD',
//      PARMS='-f /etc/syslog.conf -m 30 -p /dev/log'
//*
//SYSLOGD  EXEC PGM=&MODULE,REGION=4096K,TIME=NOLIMIT,
//      PARM='POSIX(ON) ALL31(ON)/&PARMS'
//SYSPRINT DD SYSOUT=*
```

Common Error Messages When Migrating

- When starting syslogd and receive the following error:

  BPXF024I (IBMUSER) Aug 11 06:18:45 syslogd: cannot create /dev/log: EDC8114I Address family not supported.

- This means that AF_UNIX has not been defined in BPXPRMxx member; adding this will require an IPL.

```
FILESYSTYPE TYPE(IBMUDS) ENTRYPOINT(BPXTUINT)
NETWORK DOMAINNAME(AF_UNIX)
            DOMAINNUMBER(1)
            MAXSOCKETS(2000)
            TYPE(IBMUDS)
```

- The log files that are defined in /etc/syslog.conf need to exist before starting syslogd. If they do not exist, the message 'No such file or directory exists.' will be displayed. To create the files issue the following command:

  touch /tmp/log.filename

  - Permission bits of 644 are adequate for log files, since most processes that write to the log files are associated with a superuserid (UID=0).

Using CRON to Manage SYSLOGD

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Approaches to Managing SYSLOGD Logfile

1. **At every IPL refresh /tmp directory by establishing a Temporary File System in BPXPRMnn. (Not Recommended)**
2. **Use a permanent HFS mounted at /tmp mountpoint for use by logs. Maintain logs either manually or automatically via CRON Daemon.**
   a. **Periodically copy logs into an HFS; use other procedure to archive (ADSM, DFSMS Unload, etc.)**
   b. **Periodically copy logs from HFS into an MVS dataset; use traditional MVS procedures to archive**
      - **Leave MVS datasets as sequential datasets (or PDS members), or ...**
      - **Convert MVS datasets once copied from HFS into Generation Dataset (GDG) members.**
   c. **These procedures could be used to manage other types of logs as well: OROUTED, OMPROUTE, CRON, etc.**
3. **To display usage on Hierarchical File Systems, use the OMVS command:**
   a. **DF (shows all usage)**
   b. **DF -P /tmp (shows usage for HFS mounted at /tmp mountpoint)**

Manage with Temporary File System

SYS1.PARMLIB(BPXPRMnn) to Define and Mount Temporary File System (TFS)

```
FILESYSTYPE TYPE(TFS) ENTRYPOINT(BPXTFS)  /* TFS for /tmp       */

MOUNT FILESYSTEM('/TMP') TYPE(TFS)            /* temp space at /tmp  */
      MOUNTPOINT('/tmp') PARM('-s 80')
```

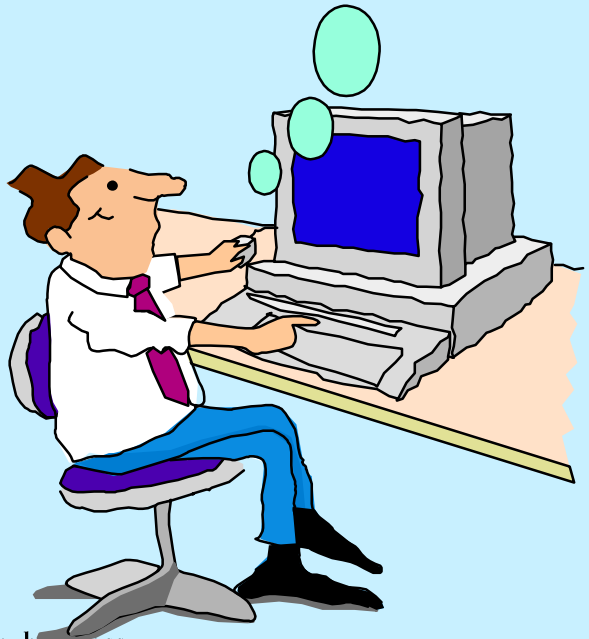
/etc/rc Definition to Create Target Log Files for SYSLOG Daemon and to Start

```
# Create target files for SYSLOG daemon if it is running on
TFS
#>/tmp/auth.log
#>/tmp/error.log
#>/tmp/debug.log
#>/tmp/syslog.log

# Start the SYSLOG daemon for logging UNIX activity
_BPX_JOBNAME='SYSLOGD' /usr/sbin/syslogd -f /etc/syslog.conf &
#  /usr/sbin/syslogd -f /etc/syslog.conf &
sleep 5
echo /etc/rc script executed, `date`
```

Manage with Permanent HFS

OK, Time to copy log files, erase old ones, create new ones, restart SYSLOG Daemon ....



Wow, CRON Daemon automation is great!

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Displaying Usage on HFS

==> DF

```
******************************** Top of Data ********************************
Mounted on     Filesystem                 Avail/Total    Files      Status
/u/users       (OMVS.HOMEDIRS.HFS)        12904/12960    4294967292 Available
/u/tf          (OMVS.TF.HFS)              1400/1440      4294967294 Available
/u/rdm         (OMVS.RDM.HFS)             177032/177120  4294967293 Available
/u/jc          (OMVS.JC.HFS)              1400/83520     4294967051 Available
/u/harrisl     (OMVS.HARRISL.HFS)         176976/177120  4294967288 Available
/u/gdente      (OMVS.GDENTE.HFS)          161552/177120  4294967238 Available
/usr/lpp/HOD   (OMVS.HOD40.HOM.HFS)       222968/1308960 4294918223 Available
/tmp           (OMVS.NM2.TMP)             174152/182880  4294967208 Available
/etc           (OMVS.V2R7.ETC.HFS)        6792/11520     4294966979 Available
/              (OMVS.V2R7.PUT9904.BASE.HFS)131696/1398240 4294953323 Available
******************************** Bottom of Data ********************************
```

DF -P /tmp

```
********************************* Top of Data *********************************
Filesystem          512-blocks        Used  Available  Capacity Mounted on
OMVS.NM2.TMP            182880        8736     174144        5% /tmp
******************************** Bottom of Data ********************************
```

Case Study: Managing SYSLOG with CRON

OMVS.HFS.ETC at
Mountpoint "/etc/"

/syslog.conf
***.* /tmp/syslog.log.a**

. OR .

/syslog.conf.a
***.* /tmp/syslog.log.a**

/syslog.conf.b
***.* /tmp/syslog.log.b**

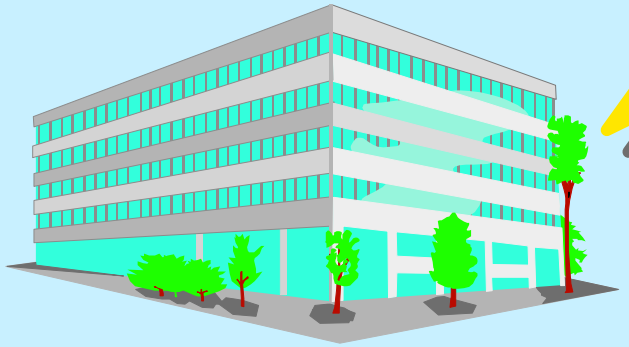
Day 1

OMVS.HFS.TMP at
Mountpoint "/tmp/"

syslog.log.a
(ACTIVE + FULL)

syslog.log.b
(EMPTY)

Day 2:
Archive



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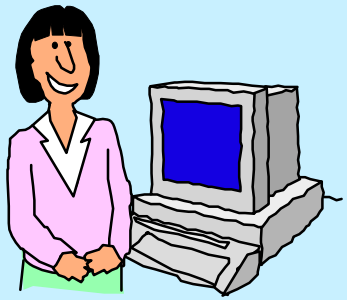
CRON Daemon Work Flow

1



Work Request:

- Unix Shell Commands
  - at >> /usr/spool/cron/at/...
  - batch >> /usr/ ... /batch/
  - crontab >> /usr/ ... /crontabs/

AUTHORIZED?

YES

NO

2

Reject

3 Daemon Startup or User Signal

4 Build Work Request Queue

1	2	3	4
5	6	7	8
9			

/usr/spool/cron/...

...at/
...batch/
...crontabs/

5

Schedule Request

WLM Address Space

6
RUN REQUESTS

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Important Files for CRON on OS/390

OMVS.V2R7.PUT9904.BASE.HFS

at Mountpoint "/"

/usr/spool/cron/...
- crontabs
  - ***OMVSKERN***
  - ***GDENTE2***
  - ***(your entries)***
- log

/usr/sbin/cron

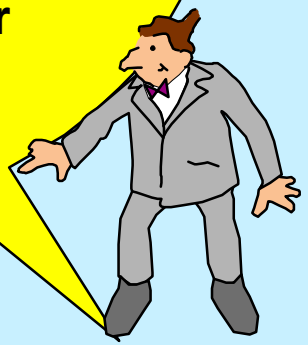
/usr/lib/cron/...
- pid
- at.allow
- at.deny
- cron.allow
- cron.deny
- queuedefs

OMVS.YOURBACKUP

at Mountpoint "/u/sysprog"

/u/sysprog/...
- crontabs
  - ***OMVSKERN***
  - ***GDENTE2***
  - ***(your entries)***

Safeguard your configured crontab entries! They are stored in the /usr/spool/cron/crontabs subdirectory and are replaced (LOST) via maintenance or system upgrade!



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Prestarting CRON Daemon

Start with UNIX /etc/rc

```
# Create the target files for SYSLOG daemon if it is running on TFS
#>/tmp/auth.log
#>/tmp/error.log
#>/tmp/debug.log
#>/tmp/syslog.log

# Start the SYSLOG daemon for logging UNIX activity
_BPX_JOBNAME='SYSLOGD' /usr/sbin/syslogd -f /etc/syslog.conf &
#  /usr/sbin/syslogd -f /etc/syslog.conf &
# Start the INET daemon for remote login activity
_BPX_JOBNAME='INETD' /usr/sbin/inetd /etc/inetd.conf &
#  /usr/lpp/tcpip/sbin/dhcpsd -f /etc/dhcpsd.cfg &
# Start the CRON daemon for automated, timed operations
_BPX_JOBNAME='CRON' /usr/sbin/cron &
#           /usr/sbin/cron &
sleep 5
echo /etc/rc script executed, `date`
```

Jobname "CRON.." vs.

Jobname "ETCRC."

```
D OMVS,A=ALL
OMVSKERN ETCRC7   0033   50331652          1 1KI   19.11.23      4.123
  LATCHWAITPID=          0 CMD=/usr/sbin/cron
                .........  OR  ..................
OMVSKERN CRON7    0033   16777221          1 1KI   08.24.48       .053
 LATCHWAITPID=          0 CMD=/usr/sbin/cron
```

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Prestarting CRON and RACF

Authorize Userid with BPX.DAEMON.

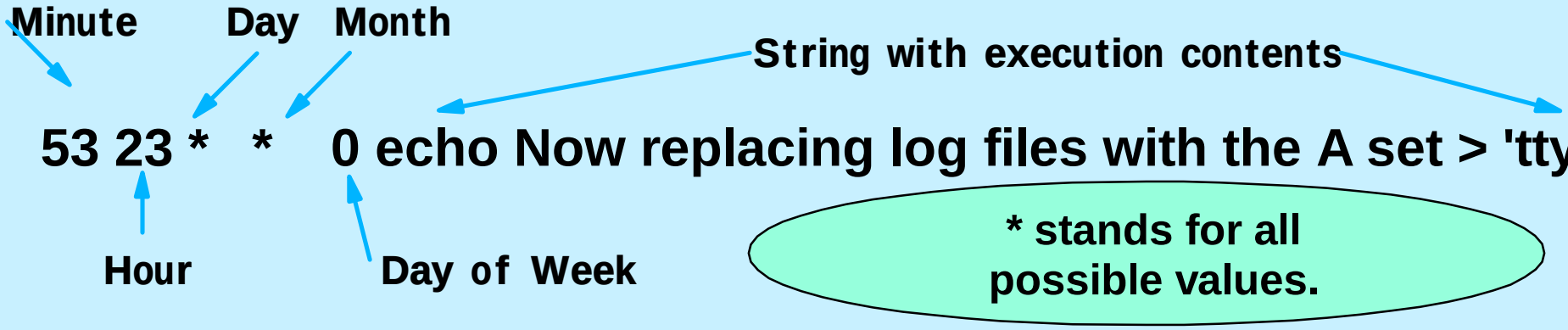
```
RDEFINE FACILITY BPX.DAEMON UACC(NONE)
SETROPTS CLASSACT(FACILITY) GENERIC(FACILITY AUDIT(FACILITY))
SETROPTS RACLIST(FACILITY)
PERMIT BPX.DAEMON CLASS(FACILITY) ID(OMVSKERN) ACCESS(READ)
```

If archiving to MVS, authorize userid to write to MVS datasets.

Important Commands for CRON

- CRONTAB [-u user] [filename] -- highly recommended!
  - Stores crontab entry by that username in correct directory; "-u" parameter is allowed only for Superusers.
  - Should be used by Superuser to store a file that is maintained in a private directory (backup directory) into the crontab subdirectory. (Other methods, including CRONTAB -e, can inadvertently delete the main crontab entry.)
- CRONTAB -l [-u user] -- to view file in crontab subdirectory
- CRONTAB -r [-u user] -- to delete a file from crontab subdirectory
- CRONTAB -e [-u user] (Not recommended - don't directly edit! You could inadvertently delete your entries!)

Crontab Format and Sample




```
# This is a sample crontab file stored
# in my maintenance directory
53 23 * * 0 echo Now replacing log files with the A set >
'tty'
54 23 * * 0 cp /etc/syslog.conf.a /etc/syslog.conf
55 23 * * 0 kill -SIGHUP $(cat /etc/syslog.pid)
56 23 * * 0 cp /tmp/syslog.log.b /tmpback/syslog.log.backb
59 23 * * 0 rm /tmp/syslog.log.b
00 00 * * 0 touch /tmp/syslog.log.b
```

Validation for CRONTAB Command

crontab -l

```
****************************** Top of Data ******************
#  This is the GDENTE2 crontab file
#  To print something nice in the log at 1:16 PM everyday
16 13 * * 0-6 echo Commit senseless acts of beauty! > 'tty'
****************************** Bottom of Data ***************
```

Userid = GDENTE2

at Mountpoint "/"

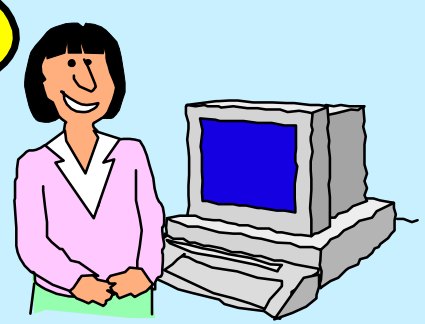
/usr/spool/cron/...

- crontabs
  - ***OMVSKERN***
  - ***GDENTE2***
    - `# To say "hello"`
    - `16 13 * * 0-6 ..`

/usr/lib/cron/...

- cron.allow
  - ***GDENTE2***
  - ***OMVSKERN***

crontab -l



Userid = CHARLIE

```
****************************** Top of Data **********
crontab: You are not authorized to use cron. Sorry.
****************************** Bottom of Data *********
```

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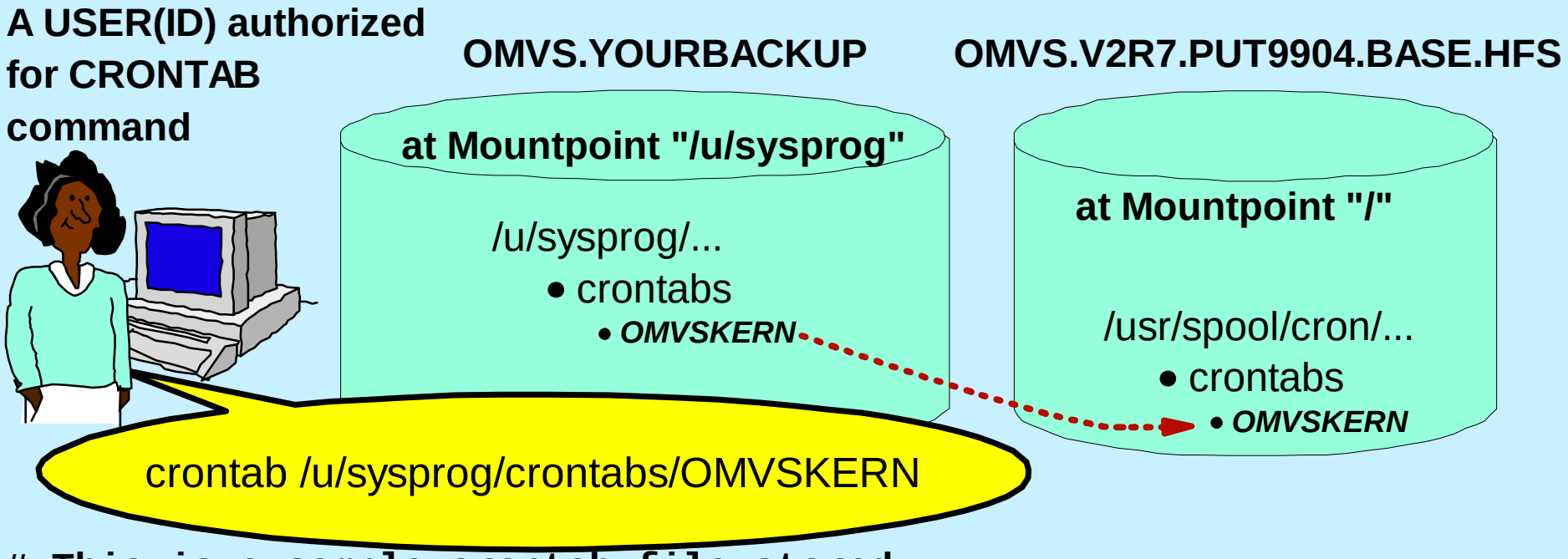
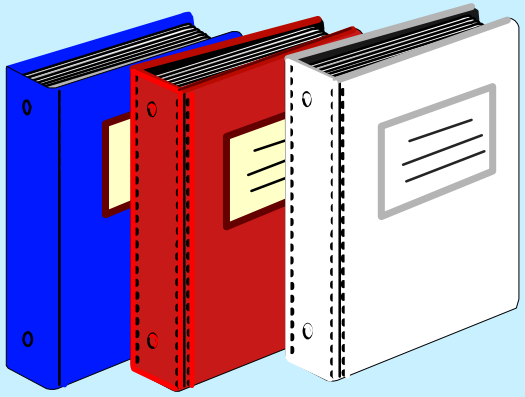
Storing a Crontab File




```
# This is a sample crontab file stored
# in my backup directory
53 23 * * 0 echo Now replacing log files with the A set >
'tty'
54 23 * * 0 cp /etc/syslog.conf.a /etc/syslog.conf
55 23 * * 0 kill -SIGHUP $(cat /etc/syslog.pid)
56 23 * * 0 cp /tmp/syslog.log.b /tmpback/syslog.log.backb
59 23 * * 0 rm /tmp/syslog.log.b
00 00 * * 0 touch /tmp/syslog.log.b
```

Viewing the CRON Log

```
>  CMD: echo Replace log files with A set and Copy B to MVS >
'tty'
>  OMVSKERN 184549386 c Tue Jul 13 23:51:03 1999
<  OMVSKERN 184549386 c Tue Jul 13 23:51:04 1999 rc=0
>  CMD: /etc/replaceb.sh
>  OMVSKERN 201326602 c Tue Jul 13 23:52:00 1999
<  OMVSKERN 201326602 c Tue Jul 13 23:52:08 1999 rc=0
>  CMD: echo If only the weekend could begin now! > 'tty'
>  OMVSKERN 939524108 c Wed Jul 14 12:15:01 1999
<  OMVSKERN 939524108 c Wed Jul 14 12:15:02 1999 rc=0
>  CMD: echo Commit random acts of kindness! > 'tty'
>  OMVSKERN 956301324 c Wed Jul 14 12:56:01 1999
<  OMVSKERN 956301324 c Wed Jul 14 12:56:01 1999 rc=0
```



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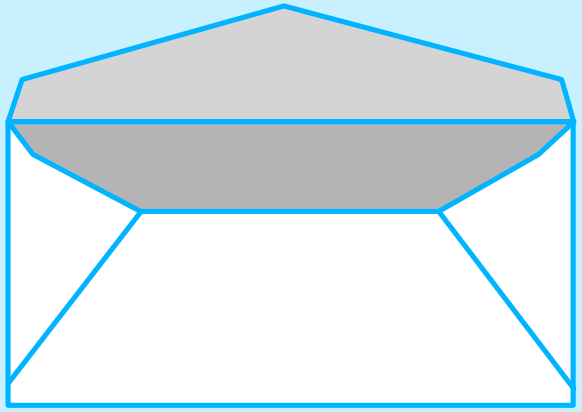
Mail Log for CRON User

```
From OMVSKERN Tue Jul 13 23:52:10 1999
To: OMVSKERN

alloc da('gdente.syslog.log.b') dsorg(ps) space(3,1) cylinders l
oget '/tmp/syslog.log.b' 'gdente.syslog.log.b'
BPXF112W THE RECORD SIZE IN THE OUTPUT DATA SET IS SMALLER THAN


**********************************************************
Cron: The previous message is the standard output
      and standard error of one of your cron commands.
```



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Sample CRONTAB File (HFS to HFS)

```
#  Copies logs into HFS dataset
#  ORIGINAL Crontab named OMVSKERN.hfs stored in
#  /usr/spool/cron/crontabs
#  Every night archive log except Saturday night
#  Another process archives log files on /tmpback to tape or
other
53 23 * * 0 echo Now replacing log files with the A set > 'tty'
54 23 * * 0 cp /etc/syslog.conf.a /etc/syslog.conf
55 23 * * 0 kill -SIGHUP $(cat /etc/syslog.pid)
56 23 * * 0 cp /tmp/syslog.log.b /tmpback/syslog.log.backb
59 23 * * 0 rm /tmp/syslog.log.b
00 00 * * 0 touch /tmp/syslog.log.b
#
53 23 * * 1 echo Now replacing log files with the B set > 'tty'
54 23 * * 1 cp /etc/syslog.conf.b /etc/syslog.conf
55 23 * * 1 kill -SIGHUP $(cat /etc/syslog.pid)
56 23 * * 1 cp /tmp/syslog.log.a /tmpback/syslog.log.backa
59 23 * * 1 rm /tmp/syslog.log.a
00 00 * * 1 touch /tmp/syslog.log.a
```

AND SO ON THROUGH DAY 5!

Sample CRONTAB File (HFS to MVS)

```
#  Copies logs into MVS dataset
#  Every night archive log except Saturday night
#  Another process archives log files to tape or other from MVS
#
53 23 * * 0 echo Now replacing log files with the A set > 'tty'
54 23 * * 0 cp /etc/syslog.conf.a /etc/syslog.conf
55 23 * * 0 kill -SIGHUP $(cat /etc/syslog.pid)
56 23 * * 0 tso -t "OGET '/tmp/syslog.log.b' 'GDENTE.SUNLOG.MVS'"
59 23 * * 0 rm /tmp/syslog.log.b
00 00 * * 0 touch /tmp/syslog.log.b
#
53 23 * * 1 echo Now replacing log files with the B set > 'tty'
54 23 * * 1 cp /etc/syslog.conf.b /etc/syslog.conf
55 23 * * 1 kill -SIGHUP $(cat /etc/syslog.pid)

56 23 * * 1 cp /tmp/syslog.log.a /tmpback/syslog.log.backa
56 23 * * 1 tso -t "OGET '/tmp/syslog.log.b' 'GDENTE.MONLOG.MVS'"
59 23 * * 1 rm /tmp/syslog.log.a
00 00 * * 1 touch /tmp/syslog.log.a
#
#          AND SO ON THROUGH DAY 5!
```

Sample CRONTAB File (HFS to MVS Using Shell Script)

```
#  Copies logs into MVS dataset
#  Every night archive log except Saturday night
#  This CRONTAB = /etc/OMVSKERN.scr2
#  Another process archives the log files from MVS to GDS and/or tape
#
51 23 * * 0 echo Replace log files with A set & Copy B to MVS > 'tty'
52 23 * * 0 /etc/replaceb.sh
#
51 23 * * 1 echo Replace log files with B set & Copy A to MVS > 'tty'
52 23 * * 1 /etc/replacea.sh
#
51 23 * * 2 echo Replace log files with A set & Copy B to MVS > 'tty'
52 23 * * 2 /etc/replaceb.sh
#
51 23 * * 3 echo Replace log files with B set & Copy A to MVS > 'tty'
52 23 * * 3 /etc/replacea.sh
#
#          AND SO ON THROUGH DAY 5!
```

Crontab Shell Script: HFS to MVS (1)

```
#  Step 1)  Setting up Variables
# LOG_DIRECTORY is the path of the syslogs files.  i.e. /tmp/syslog
LOG_DIRECTORY='/tmp'
# The following variables hold the names of the various log files
SYSLOG_LOGA='syslog.log.a'
# ERROR_LOG='error.log'
# DS_PREFIX is the Data Set Prefix. Files will be named with this hlq
# For example, HFS error.log becomes 'gdente.error.log' in MVS
DS_PREFIX='gdente'
# The following loop iterates through all the log files and executes
# the commands in the loop on each file.
#for LOGFILE in $SYSLOG_A $ERROR_LOG
for LOGFILE in $SYSLOG_LOGA
do
#
#  Step 2)  Allocating MVS Datasets
#
tso -t "alloc da('$DS_PREFIX.$LOGFILE')dsorg(ps)space(3,1) cylinders
\
lrecl(132) blksize(13200) recfm(f,b) volume(csscat) unit(sysda) old"
#lrecl(132) blksize(13200) recfm(f,b) volume(csscat) unit(sysda) new"
#
```

Crontab Shell Script: HFS to MVS (2)

```
#  Step 3)  Swap out syslogd.conf files  (Copy B configuration file
#           into /etc/syslog.conf to record on B logs)
#
cp /etc/syslog.conf.b /etc/syslog.conf
#
#  Step 4)  Force SYSLOGD to reread the new configuration file
#
kill -SIGHUP $(cat /etc/syslog.pid)
#  Step 5)  Copy old A logs to an MVS Dataset and wait 1 minute
sleep 1
tso -t oget \'$LOG_DIRECTORY/$LOGFILE\' \'$DS_PREFIX.$LOGFILE\'
#  Step 6)  Delete and Recreate the A log file
#           We've copied the specified file if it exists,
#           so now we should delete and recreate the log file.
 rm $LOG_DIRECTORY/$LOGFILE
 touch $LOG_DIRECTORY/$LOGFILE
#
# DONE - files should now be in a MVS dataset for some other archiver
# to handle. Every night, with the exception of Saturday, the cron
# daemon uses the crontab entry to swap out the log files.  Archiver
# program must run at least every two days; otherwise the data is
# overwritten with a new tso allocate command ("old").
done
```

Other Logging Issues: GMT, OROUTED, OMPROUTE

Setting Time in OS/390 and UNIX

SYS1.PARMLIB(IEASYS00)

```
CLOCK=00, ...
OMVS=07,
```

SYS1.PARMLIB(CLOCK00)

```
TIMEZONE W.05.00.00
or
TIMEZONE W.04.00.00
```

EST

EDT

Hardware Clock:

GMT Time (UTC)

/etc/init.options

```
-e TZ=EST5EDT
```

/etc/profile

```
TZ=EST5EDT
```

http://www.bldrdoc.gov/timefreq/javaclck.htm

http://tycho.usno.navy.mil/frtime.html

REFERENCE:

UNIX System Services Command Reference

Controlling Time Stamp in SYSLOG File

```
//CEEBINIT JOB 1,'5645-001',MSGLEVEL=(1,1)
//*
//STEP1 EXEC PGM=ASMA90,PARM='DECK,NOOBJECT'
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(1,1))
//SYSUT2 DD UNIT=SYSDA,SPACE=(CYL,(1,1))
//SYSUT3 DD UNIT=SYSDA,SPACE=(CYL,(1,1))
//SYSPUNCH DD DSN=&&TEMPOBJ(CEEBINIT),DISP=(,PASS),UNIT=SYSDA,
// SPACE=(TRK,(1,1,1)),DCB=(BLKSIZE=3120,LRECL=80,DSORG=PO)
//SYSLIB DD DSN=CEE.MVS650.SCEEMAC,DISP=SHR          <- CHANGE
//       DD DSN=SYS1.MACLIB,DISP=SHR
//SYSIN DD *
*/*****************************************************************/
CEEDOPT  CSECT
CEEDOPT  AMODE ANY
CEEDOPT  RMODE ANY
         CEEXOPT ABPERC=((NONE),OVR),
              ABTERMENC=((RETCODE),OVR),
              AIXBLD=((OFF),OVR),
              ALL31=((OFF),OVR),
                              etc.....................................................
```

Controlling Time Stamp in SYSLOG File

```
                COUNTRY=((US),OVR),
                DEBUG=((ON),OVR),
                DEPTHCONDLMT=((10),OVR),
                ENVAR=(('TZ=EST5EDT'),OVR),
                ..............................
                XUFLOW=((AUTO),OVR)
        END
/*
//STEP2    EXEC  PGM=IEWL,
//         PARM='NCAL,RENT,LIST,XREF,LET,MAP,SIZE=(9999K,96K)'
//SYSPRINT DD  SYSOUT=*
//SYSUT1   DD  UNIT=SYSDA,SPACE=(TRK,(5,5))
//LIBRARY  DD  DSNAME=CEEL.MVS650.SCEERUN,DISP=SHR    <- CHANGE
//SYSLMOD  DD  DSNAME=USER.LINKLIB,DISP=SHR          <- CHANGE
//SYSLIB   DD  DSN=&&TEMPOBJ,DISP=(OLD,PASS)
//SYSLIN   DD  *
 INCLUDE SYSLIB(CEEBINIT)
 INCLUDE LIBRARY(CEEBINIT)
 ENTRY   CEEBINIT
 ORDER   CEEBINIT
 NAME CEEBINIT(R)
/*
```

TZ set to LOCAL - Same as CLOCKnn in PARMLIB

Source at:
www.software.ibm.com/network/commserver/support/
V2R6 USAGE in "technical database" & "Services"

SYSLOG Daemon Logfile (Timestamps)

```
Jul  8 15:24:03 WSC1 FSUM1220 syslogd: restart
Jul  8 19:25:53 WSC1 Config[67108868]: EZZ0300I OPENED PROFILE
FILE
Jul  8 19:25:53 WSC1 Config[67108868]: EZZ0309I PROFILE PROCESSING
.....................................
Jul  8 19:28:11 WSC1 ftpd[369098755]: EZYFT18I Using catalog
Jul  8 19:28:11 WSC1 ftpd[369098755]: EZYFT08W Unable to get port
Jul  8 19:28:11 WSC1 ftpd[369098755]: EZY2697I IBM FTP CS V2R7
Jul  8 19:28:12 WSC1 ftpd[369098755]: EZY2640I Using
Jul  8 19:28:12 WSC1 ftpd[369098755]: EZYFT47I dd:SYSFTPD file,
.....................................
Jul  8 19:28:12 WSC1 ftpd[1577058316]: EZY2702I Server-FTP:
Jul  8 19:28:12 WSC1 ftpd[1577058316]: EZYFT41I Server-FTP:
process
Jul  8 15:36:15 WSC1 inetd[83886093]: FOMN0044 Unable to lock
/etc/inetd.pid: EDC5112I Resource temporarily unavailable.,
rsn=055501B7
Jul  8 15:39:12 WSC1 inetd[134217741]: FOMN0026 otelnet/tcp:
unknown service
Jul  8 15:47:25 WSC1 telnetd[33554448]: IP address is 9.82.131.114
```

SYSLOG Daemon Logfile with CEEBINIT

```
Jul  8 08:31:34 LO0 FSUM1220 syslogd: restart
Jul  8 12:33:47 LO0 ConfigÝ16777218¨: EZZ0300I OPENED PROFILE FILE
Jul  8 12:33:48 LO0 ConfigÝ16777218¨: EZZ0316I PROFILE PROCESSING
Jul  8 12:33:48 LO0 ConfigÝ16777218¨: EZZ0334I IP FORWARDING IS
Jul  8 12:33:48 LO0 ConfigÝ16777218¨: EZZ0335I ICMP WILL IGNORE
Jul  8 12:33:48 LO0 ConfigÝ16777218¨: EZZ0352I VARIABLE SUBNETTING
Jul  8 12:33:48 LO0 ConfigÝ16777218¨: EZZ0345I STOPONCLAWERROR IS
Jul  8 12:34:03 LO0 ConfigÝ16777218¨: EZZ0403I TELNET/VTAM (SECOND
Jul  8 12:34:04 LO0 ftpdÝ13¨: EZYFT18I Using catalog '/usr/lib/nls
Jul  8 12:34:04 LO0 ftpdÝ13¨: EZY2697I IBM FTP CS V2R7 12:34:04
Jul  8 12:34:04 LO0 ftpdÝ13¨: EZY2640I Using dd:SYSFTPD=SYS1.TCPP
Jul  8 12:34:04 LO0 ftpdÝ13¨: GU0754 chkunit: unitname 3390
Jul  8 12:34:04 LO0 ftpdÝ13¨: EZYFT21I Using catalog
'/usr/lib/nlst
Jul  8 12:34:06 LO0 snmpagentÝ16¨: EZZ6202I Using catalog 'snmpd
Jul  8 12:34:06 LO0 snmpagentÝ16¨: EZZ6232I The SNMP agent is run
Jul  8 12:34:06 LO0 snmpagentÝ16¨: EZZ6295I SNMP agent: Dynamic
.................
Jul  8 12:37:49 LO0 telnetdÝ167772177¨: EZYTE52E Couldn't resolve
Jul  8 12:37:49 LO0 telnetdÝ167772177¨: IP address is 9.82.1.107
```

TSO NETSTAT without CEEBINIT

```
 ===> netstat home


MVS TCP/IP NETSTAT CS V2R7       TCPIP NAME: NM2ATCP   21:49:42
 Home address list:
 Address           Link              Flg
 -------           ----              ---
 192.168.251.1     VLINK1
 192.168.253.1     VLINK2
 9.82.1.170        TR1               P
 9.82.67.170       LNK2BTCP
 ***

TIME-05:50:46 PM.  CPU-00:00:05 SERVICE-663221 SESSION-01:49:17
JULY 14,1999
***
```

GMT or UDC Time

Local (CLOCKnn=TIMEZONE W.04.00.00)

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TSO NETSTAT with CEEBINIT

```
 ===> netstat home


MVS TCP/IP NETSTAT CS V2R7        TCPIP NAME: NM2ATCP  18:04:34
Home address list:
Address           Link             Flg
-------           ----             ---
192.168.251.1     VLINK1
192.168.253.1     VLINK2
9.82.1.170        TR1              P
9.82.67.170       LNK2BTCP
***

TIME-06:05:30 PM. CPU-00:00:05 SERVICE-773160 SESSION-02:04:01
JULY 14,1999
***
```

LE:
ENVAR=(('TZ=EST5EDT'),OVR),

Local (CLOCKnn=TIMEZONE W.04.00.00)

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If You Don't Want to Log in the HFS

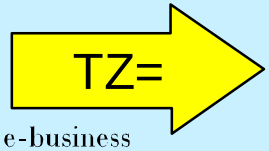
OMPROUTE JCL Procedure to CHANGE to POSIX(ON) Program:

```
//OMPROUTE PROC
//OMPROUTE EXEC PGM=OMPROUTE,REGION=0M,TIME=NOLIMIT,
//         PARM='POSIX(ON) ENVAR("_CEE_ENVFILE=DD:STDENV" )/ -t1'
//STDENV   DD DSN=USER1.ALFRED.TCPPARMS(OMPRENV),DISP=SHR
//CEEDUMP  DD SYSOUT=*,DCB=(RECFM=FB,LRECL=132,BLKSIZE=132)
//SYSPRINT DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
```

The ENVAR PARM field option instructs LE initialization routines to open DD-name STDENV (you can use any DD-name, you want - We just used STDENV in this case, because that's the DD-name BPXBATCH used). The LE initialization routines read the content of the data set pointed to by the STDENV DD-name, and initialize environment variables according to what is specified in STDENV DD:

OMPRENV

```
RESOLVER_CONFIG=//'USER1.ALFRED.TCPPARMS(TCPDATA)'
OMPROUTE_FILE=//'USER1.ALFRED.TCPPARMS(OMPROUTE)'
TZ=EST5EDT
```



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If You Don't Want to Log in the HFS

OROUTED JCL EXAMPLE: POSIX(ON) with STDOUT & STDERR to SYSPRINT

```
//OROUTED PROC
//OROUTED EXEC PGM=OROUTED,
// PARM=('POSIX(ON)',
//      'MSGFILE(ERRORS),ENVAR("_CEE_ENVFILE=DD:STDENV")/-ep -t -t')
//CEEDUMP  DD SYSOUT=*
//ERRORS   DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//STDENV   DD DSN=USER1.ALFRED.TCPPARMS(ROUTDENV),DISP=SHR
```

Another small detail: you can decide what DD-name LE will use for STDERR by passing an LE runtime option called MSGFILE. ***In this example, we chose a DD name of ERRORS.***

ROUTDENV

```
RESOLVER_CONFIG=//'USER1.ALFRED.TCPPARMS(TCPDATA)'
ROUTED_PROFILE=//'USER1.ALFRED.TCPPARMS(ROUTPROF)'
GATEWAYS_FILE=//'USER1.ALFRED.TCPPARMS(GATEWAYS)'
TZ=EST5EDT
```

TZ=

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